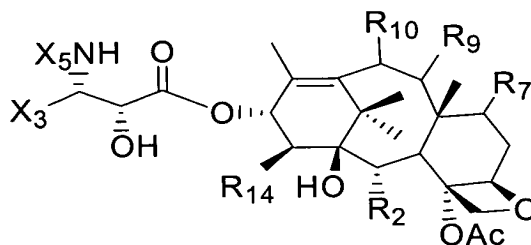


Express Mail No. EL 998648560 US

Claims

1. A taxane having the formula



- 5 R_2 is acyloxy;
 R_7 is hydroxy;
 R_9 is keto, hydroxy, or acyloxy;
 R_{10} is $R_{10a}COO-$;
 R_{10a} is hydrocarbyl, substituted hydrocarbyl, or heterocyclo wherein said
 10 hydrocarbyl or substituted hydrocarbyl contains carbon atoms in the alpha and
 beta positions relative to the carbon atom of which R_{10a} is a substituent;
 R_{14} is hydrido or hydroxy;
 X_3 is heterocyclo or substituted or unsubstituted alkyl, alkenyl, or alkynyl,
 wherein alkyl comprises at least two carbon atoms;
 15 X_5 is $-COX_{10}$, $-COOX_{10}$, or $-CONHX_{10}$;
 X_{10} is hydrocarbyl, substituted hydrocarbyl, or heterocyclo; and
 Ac is acetyl.

2. The taxane of claim 1 wherein R_{10a} is substituted or unsubstituted
 $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl or $C_2 - C_8$ alkynyl.

3. The taxane of claim 2 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl,
 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$
 alkynyl.

4. The taxane of claim 2 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or
 unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl,
 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-COOX_{10}$ and X_{10}
 is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

Express Mail No. EL 998648560 US

5. The taxane of claim 2 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.
6. The taxane of claim 2 wherein R_{14} is hydrido.
7. The taxane of claim 6 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.
8. The taxane of claim 6 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.
9. The taxane of claim 6 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.
10. The taxane of claim 2 wherein R_2 is benzoyloxy.
11. The taxane of claim 10 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.
12. The taxane of claim 10 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.
13. The taxane of claim 10 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.
14. The taxane of claim 2 wherein R_{14} is hydrido and R_9 is keto.
15. The taxane of claim 14 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

Express Mail No. EL 998648560 US

16. The taxane of claim 14 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.
17. The taxane of claim 14 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.
18. The taxane of claim 2 wherein R_2 is benzoyloxy and R_9 is keto.
19. The taxane of claim 18 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_2 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.
20. The taxane of claim 18 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.
21. The taxane of claim 18 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.
22. The taxane of claim 2 wherein R_{14} is hydrido and R_2 is benzoyloxy.
23. The taxane of claim 22 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_2 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.
24. The taxane of claim 22 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.
25. The taxane of claim 22 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

Express Mail No. EL 998648560 US

26. The taxane of claim 2 wherein R_{14} is hydrido, R_9 is keto, and R_2 is benzoyloxy.

27. The taxane of claim 26 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

28. The taxane of claim 26 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

29. The taxane of claim 26 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

30. The taxane of claim 1 wherein R_{10a} is $C_2 - C_8$ alkyl.

31. The taxane of claim 30 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

32. The taxane of claim 30 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

33. The taxane of claim 30 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

34. The taxane of claim 30 wherein R_{14} is hydrido.

35. The taxane of claim 34 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

Express Mail No. EL 998648560 US

36. The taxane of claim 34 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

37. The taxane of claim 34 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

38. The taxane of claim 30 wherein R_2 is benzoyloxy.

39. The taxane of claim 38 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_2 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

40. The taxane of claim 38 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

41. The taxane of claim 38 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

42. The taxane of claim 30 wherein R_{14} is hydrido and R_9 is keto.

43. The taxane of claim 42 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_2 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

44. The taxane of claim 42 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

45. The taxane of claim 42 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

Express Mail No. EL 998648560 US

46. The taxane of claim 30 wherein R_2 is benzoyloxy and R_9 is keto.
47. The taxane of claim 46 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.
48. The taxane of claim 46 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.
49. The taxane of claim 46 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.
50. The taxane of claim 30 wherein R_{14} is hydrido and R_2 is benzoyloxy.
51. The taxane of claim 50 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.
52. The taxane of claim 50 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.
53. The taxane of claim 50 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.
54. The taxane of claim 30 wherein R_{14} is hydrido, R_9 is keto, and R_2 is benzoyloxy.
55. The taxane of claim 54 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

Express Mail No. EL 998648560 US

56. The taxane of claim 54 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

57. The taxane of claim 54 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

58. The taxane of claim 1 wherein R_{10a} is ethyl.

59. The taxane of claim 58 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_2 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

60. The taxane of claim 58 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

61. The taxane of claim 58 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

62. The taxane of claim 58 wherein R_{14} is hydrido.

63. The taxane of claim 62 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_2 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

64. The taxane of claim 62 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

65. The taxane of claim 62 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

Express Mail No. EL 998648560 US

66. The taxane of claim 58 wherein R_2 is benzoyloxy.
67. The taxane of claim 66 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.
68. The taxane of claim 66 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.
69. The taxane of claim 66 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.
70. The taxane of claim 58 wherein R_{14} is hydrido and R_9 is keto.
71. The taxane of claim 70 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.
72. The taxane of claim 70 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.
73. The taxane of claim 70 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.
74. The taxane of claim 58 wherein R_2 is benzoyloxy and R_9 is keto.
75. The taxane of claim 74 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

Express Mail No. EL 998648560 US

76. The taxane of claim 74 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

77. The taxane of claim 74 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

78. The taxane of claim 58 wherein R_{14} is hydrido and R_2 is benzoyloxy.

79. The taxane of claim 78 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_2 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

80. The taxane of claim 78 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

81. The taxane of claim 78 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

82. The taxane of claim 58 wherein R_{14} is hydrido, R_9 is keto, and R_2 is benzoyloxy.

83. The taxane of claim 82 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_2 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

84. The taxane of claim 82 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

85. The taxane of claim 82 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

Express Mail No. EL 998648560 US

86. The taxane of claim 82 wherein X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

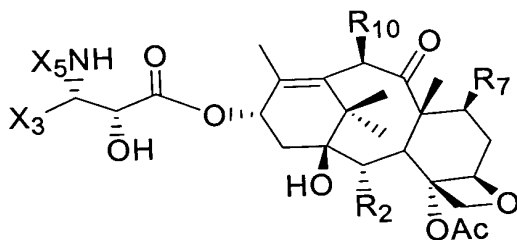
87. The taxane of claim 86 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_2 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

88. The taxane of claim 86 wherein X_3 is 2-furyl.

89. The taxane of claim 86 wherein X_3 is 2-thienyl.

90. The taxane of claim 86 wherein X_3 is cycloalkyl.

91. A taxane having the formula



R_2 is benzoyloxy;

R_7 is hydroxy;

R_{10} is $\text{R}_{10a}\text{COO}-$;

X_3 is substituted or unsubstituted heterocyclo;

X_5 is $-\text{COX}_{10}$, $-\text{COOX}_{10}$, or $-\text{CONHX}_{10}$;

X_{10} is hydrocarbyl, substituted hydrocarbyl, or heterocyclo; and

R_{10a} is hydrocarbyl, substituted hydrocarbyl, or heterocyclo wherein said hydrocarbyl or substituted hydrocarbyl contains carbon atoms in the alpha and beta positions relative to the carbon of which R_{10a} is a substituent; and

Ac is acetyl.

92. The taxane of claim 91 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl.

93. The taxane of claim 92 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl,

Express Mail No. EL 998648560 US

4-pyridyl, C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl, or X₅ is -COOX₁₀ and X₁₀ is substituted or unsubstituted C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl.

94. The taxane of claim 92 wherein X₅ is -COX₁₀ and X₁₀ is phenyl, or X₅ is -COOX₁₀ and X₁₀ is t-butyl.

95. The taxane of claim 91 wherein X₃ is furyl or thienyl.

96. The taxane of claim 95 wherein X₅ is -COX₁₀ and X₁₀ is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl, or X₅ is -COOX₁₀ and X₁₀ is substituted or unsubstituted C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl.

97. The taxane of claim 95 wherein X₅ is -COX₁₀ and X₁₀ is phenyl, or X₅ is -COOX₁₀ and X₁₀ is t-butyl.

98. The taxane of claim 91 wherein R_{10a} is ethyl or propyl.

99. The taxane of claim 98 wherein X₃ is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl.

100. The taxane of claim 99 wherein X₅ is -COX₁₀ and X₁₀ is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl, or X₅ is -COOX₁₀ and X₁₀ is substituted or unsubstituted C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl.

101. The taxane of claim 99 wherein X₅ is -COX₁₀ and X₁₀ is phenyl, or X₅ is -COOX₁₀ and X₁₀ is t-butyl.

102. The taxane of claim 98 wherein X₃ is furyl or thienyl.

103. The taxane of claim 102 wherein X₅ is -COX₁₀ and X₁₀ is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl, or X₅ is -COOX₁₀ and X₁₀ is substituted or unsubstituted C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl.

Express Mail No. EL 998648560 US

104. The taxane of claim 91 wherein X_3 is substituted or unsubstituted furyl, R_{10a} is ethyl, and X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

105. The taxane of claim 91 wherein X_3 is substituted or unsubstituted thienyl, R_{10a} is ethyl, and X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

106. The taxane of claim 91 wherein X_3 is 2-furyl or 2-thienyl, R_{10a} is ethyl, X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

107. The taxane of claim 91 wherein X_3 is 2-furyl, R_{10a} is ethyl, X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

108. The taxane of claim 91 wherein X_3 is 2-thienyl, R_{10a} is ethyl, X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

109. A pharmaceutical composition comprising the taxane of claim 1 and at least one pharmaceutically acceptable carrier.

110. The pharmaceutical composition of claim 109 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

111. The pharmaceutical composition of claim 110 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

112. The pharmaceutical composition of claim 110 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

113. The pharmaceutical composition of claim 109 wherein R_{10a} is ethyl or propyl.

Express Mail No. EL 998648560 US

114. The pharmaceutical composition of claim 113 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_2 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

115. The pharmaceutical composition of claim 114 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

116. The pharmaceutical composition of claim 114 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

117. The pharmaceutical composition of claim 110 wherein X_3 is furyl or thienyl, R_{10a} is ethyl, and X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

118. The pharmaceutical composition of claim 110 wherein X_3 is substituted or unsubstituted furyl, R_{10a} is ethyl, and X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

119. The pharmaceutical composition of claim 110 wherein X_3 is substituted or unsubstituted thienyl, R_{10a} is ethyl, and X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

120. The pharmaceutical composition of claim 110 wherein X_3 is isobutenyl, R_{10a} is ethyl, and X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

121. The pharmaceutical composition of claim 110 wherein X_3 is alkyl, R_{10a} is ethyl, and X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

122. The pharmaceutical composition of claim 110 wherein X_3 is 2-furyl or 2-thienyl, R_{10a} is ethyl, X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

Express Mail No. EL 998648560 US

123. The pharmaceutical composition of claim 110 wherein X_3 is 2-furyl, R_{10a} is ethyl, X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

124. The pharmaceutical composition of claim 110 wherein X_3 is 2-thienyl, R_{10a} is ethyl, X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

125. The pharmaceutical composition of claim 110 wherein X_3 is isobutenyl, X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

126. The pharmaceutical composition of claim 110 wherein X_3 is cycloalkyl, R_{10a} is ethyl, X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

127. A pharmaceutical composition comprising the taxane of claim 91 and at least one pharmaceutically acceptable carrier.

128. A pharmaceutical composition comprising the taxane of claim 95 and at least one pharmaceutically acceptable carrier.

129. A composition for oral administration comprising the taxane of claim 1 and at least one pharmaceutically acceptable carrier.

130. The composition of claim 129 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

131. The composition of claim 130 wherein R_{10a} is ethyl or propyl.

132. The composition of claim 131 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

133. The composition of claim 131 wherein R_{14} is hydrogen, R_2 is benzoyloxy, and X_5 is $-\text{COX}_{10}$ wherein X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ wherein X_{10} is t-butyl.

134. The composition of claim 133 wherein X_3 is isobutenyl; R_{10a} is ethyl; and X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

Express Mail No. EL 998648560 US

135. The composition of claim 133 wherein X_3 is phenyl; R_{10a} is ethyl; and X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

136. The composition of claim 133 wherein X_3 is phenyl; R_{10a} is ethyl; and X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl.

137. A method of inhibiting tumor growth in mammals, said method comprising orally administering a therapeutically effective amount of a pharmaceutical composition comprising the taxane of claim 1 and at least one pharmaceutically acceptable carrier.

138. The method of claim 137 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

139. The method of claim 138 wherein R_{10a} is ethyl or propyl.

140. The method of claim 139 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

141. The method of claim 140 wherein R_{14} is hydrogen and R_2 is benzoyloxy.

142. The method of claim 141 wherein X_3 is isobutenyl; R_{10a} is ethyl; and X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

143. The method of claim 141 wherein X_3 is phenyl; R_{10a} is ethyl; and X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

144. The method of claim 141 wherein X_3 is furyl or thienyl; R_{10a} is ethyl; and X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl.

145. The method of claim 141 wherein X_3 is phenyl; R_{10a} is ethyl; and X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl.

Express Mail No. EL 998648560 US

146. The taxane of claim 1 wherein R_{10a} is propyl, X_3 is 2-furyl, and X_5 is $-COX_{10}$ and X_{10} is propyl, trans-propenyl, butenyl, 2-thienyl or 2-furyl, or X_5 is $-COOX_{10}$ and X_{10} is ethyl, isopropyl or isobutyl.

147. The taxane of claim 1 wherein R_{10a} is propyl, X_3 is 2-thienyl, and X_5 is $-COX_{10}$ and X_{10} is propyl, trans-propenyl, isobutenyl, butenyl, phenyl, 2-thienyl, 2-furyl or 3-pyridyl, or X_5 is $-COOX_{10}$ and X_{10} is ethyl, isopropyl or isobutyl.

148. The taxane of claim 1 wherein R_{10a} is propyl, X_3 is 3-furyl, and X_5 is $-COX_{10}$ and X_{10} is trans-propenyl, or X_5 is $-COOX_{10}$ and X_{10} is isobutyl.

149. The taxane of claim 1 wherein R_{10a} is propyl, X_3 is 3-thienyl, and X_5 is $-COOX_{10}$ and X_{10} is isobutyl.

150. The taxane of claim 1 wherein R_{10a} is cyclopropyl, X_3 is 2-furyl, and X_5 is $-COX_{10}$ and X_{10} is propyl, trans-propenyl, butenyl, phenyl, 2-thienyl or 2-furyl, or X_5 is $-COOX_{10}$ and X_{10} is ethyl, isopropyl, isobutyl or t-butyl.

151. The taxane of claim 1 wherein R_{10a} is cyclopropyl, X_3 is 2-thienyl, and X_5 is $-COX_{10}$ and X_{10} is propyl, trans-propenyl, butenyl, isobutenyl, phenyl, 2-thienyl, 2-furyl or 3-pyridyl or X_5 is $-COOX_{10}$ and X_{10} is ethyl, isopropyl, isobutyl or t-butyl.

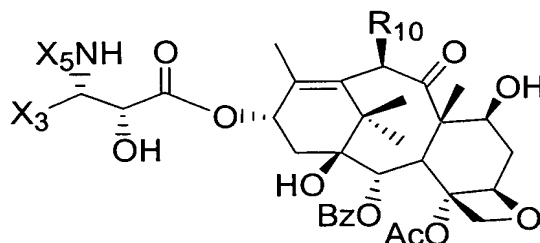
152. The taxane of claim 1 wherein R_{10a} is cyclopropyl, X_3 is 3-furyl or 3-thienyl, and X_5 is $-COX_{10}$ and X_{10} is trans-propenyl or phenyl, or X_5 is $-COOX_{10}$ and X_{10} is isobutyl or t-butyl.

153. The taxane of claim 1 wherein R_{10a} is cyclopropyl, X_3 is 2-pyridyl or 4-pyridyl, and X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

154. The taxane of claim 1 wherein R_{10a} is ethyl, X_3 is 2-furyl, and X_5 is $-COOX_{10}$ and X_{10} is t-amyl.

Express Mail No. EL 998648560 US

155. A taxane having the formula



5

 R_{10} is $R_{10a}COO^-$; R_{10a} is ethyl; X_3 is isopropyl, cyclopropyl, cyclobutyl, cyclopentyl, 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridyl, 3-pyridyl or 4-pyridyl;

10

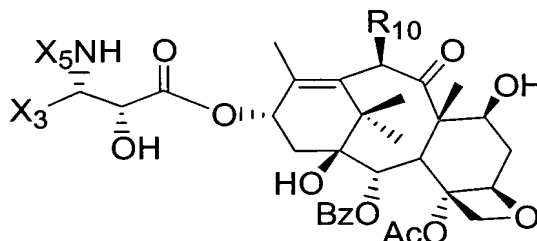
 X_5 is $-COX_{10}$ and X_{10} is propyl, butenyl, isobutenyl, phenyl, 2-thienyl, 2-furyl, 3-pyridyl or 4-pyridyl or X_5 is $-COOX_{10}$ and X_{10} is ethyl, isopropyl, isobutyl or t-butyl; and

Ac is acetyl.

156. The taxane of claim 155 wherein X_3 is 2-thienyl, 3-thienyl, 2-furyl or 3-furyl.157. The taxane of claim 155 wherein X_5 is $-COX_{10}$ and X_{10} is propyl or phenyl or X_5 is $-COOX_{10}$ and X_{10} is isopropyl, isobutyl or t-butyl.158. The taxane of claim 155 wherein X_3 is 2-thienyl.159. The taxane of claim 155 wherein X_3 is 2-furyl.160. The taxane of claim 91 wherein R_{10a} is ethyl, X_3 is 2-thienyl, 2-furyl or 3-furyl, and X_5 is $-COX_{10}$ and X_{10} is trans-propenyl.

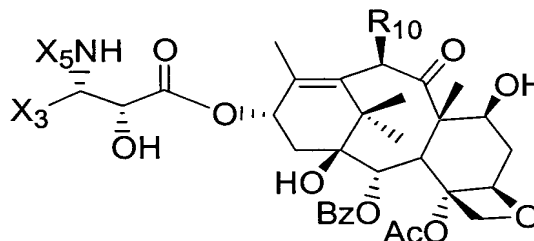
Express Mail No. EL 998648560 US

161. A taxane having the formula

 R_{10} is $R_{10a}COO-$; R_{10a} is propyl; X_3 is isopropyl, cyclopropyl, cyclobutyl, 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridyl, 3-pyridyl or 4-pyridyl; X_5 is $-COOX_{10}$ and X_{10} is t-butyl; and

Ac is acetyl.

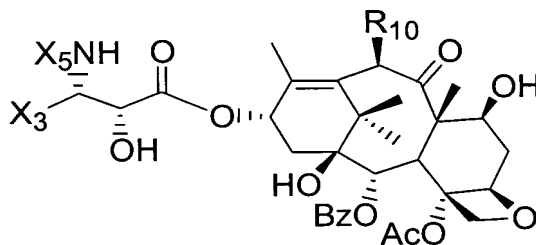
162. A taxane having the formula

 R_{10} is $R_{10a}COO-$; R_{10a} is 2-thienyl or 2-furyl; X_3 is isopropyl, cyclobutyl, isobutenyl, 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridyl, 3-pyridyl, 4-pyridyl or p-nitrophenyl; X_5 is $-COOX_{10}$ and X_{10} is t-butyl; and

Ac is acetyl.

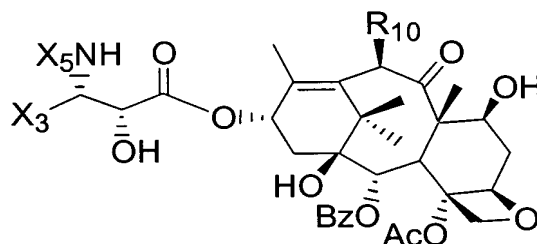
Express Mail No. EL 998648560 US

163. A taxane having the formula:

 R_{10} is $R_{10a}COO-$; R_{10a} is isobutenyl; X_3 is isobutenyl, 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridyl or 4-pyridyl; X_5 is $-COOX_{10}$ and X_{10} is t-butyl; and

Ac is acetyl.

164. A taxane having the formula

 R_{10} is $R_{10a}COO-$; R_{10a} is isopropyl or trans-propenyl; X_3 is isopropyl, cyclobutyl, isobutenyl, 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridyl, 4-pyridyl or p-nitrophenyl; X_5 is $-COOX_{10}$ and X_{10} is t-butyl; and

Ac is acetyl.